REMARKS

Prior to entry of this amendment, claims 1-8 are currently pending in the subject application. By the instant amendment, claims 1-8 are canceled, without prejudice. New claims 9-16 are presented to more particularly recite the subject matter of the present invention. The specification is amended to correct minor errors of a grammatical nature, to maintain consistency with the new claims and to more particularly describe aspects of the present invention. No new matter is added by the instant amendment as support for the amendments herein may be found in the specification and drawing figures as originally filed as detailed in connection with the particular amendments. Claims 9, 13 and 14 are independent.

Applicants appreciate the Examiner's acknowledgement of applicants' claim for foreign priority and receipt of a certified copy of the priority document.

Claims 9-16 are presented to the Examiner for initial prosecution on the merits.

A. Introduction

In the outstanding Office action, the Examiner objected to the drawing figures, objected to the specification, objected to claims 1-7 for containing informalities, rejected claims 1, 5 and 6 under 35 U.S.C. § 103(a) as being unpatentable over applicant's admitted prior art (AAPA) in view of U.S. Patent No. 6,282,803 to Dunne ("the Dunne reference") and in further view of U.S. Patent No. 4,622,843 to Hormel ("the Hormel reference"), and rejected claims 2, 3, 4, 7 and 8 under 35 U.S.C. § 103(a) as being unpatentable over AAPA, the Dunne reference, and the Hormel reference in view of U.S. Patent No. 5,744,956 to Hawks ("the Hawks reference").

B. Asserted Objections to the Drawing Figures

In the outstanding Office action, the Examiner objected to the drawing figures. In particular, the Examiner objected to FIG. 1 for failing to include the legend "PRIOR ART" and to FIG. 2 for being unclear.

By the instant amendment, addition of a legend "PRIOR ART" has been proposed in FIG. 1 and addition of a previously omitted element, viz., AND gate 160, has been proposed in FIG. 2. No new matter has been added to the instant amendment to FIG. 2 as the relationship between the pulse controller 110, the pulse generator 120, and the AND gate 160 is illustrated in FIG. 4 as originally filed.

The Examiner further indicated that the interconnection between FIGS. 2, 3 and 4 is unclear. Applicants respectfully submit that the instant amendment to FIG. 2 clarifies the relationship between FIGS. 2, 3 and 4.

Accordingly, reconsideration and withdrawal of the objections to the drawing figures are respectfully requested.

C. Asserted Objections to the Specification

In the outstanding Office action, the Examiner objected to the specification for being unclear and for containing informalities.

In particular, the Examiner indicated "it is unclear how the circuit will know when the A/D converter has completed its conversion." In the present invention, A/D conversion is completed when the pulse A generated from the pulse generator 120 and the control signal B from the pulse controller 110 are logical AND-ed to output a "low" level signal, which occurs after the A/D converter 170 outputs the digital signal to the pulse controller 110. After the pulse controller 110 receives the digital signal from the A/D converter 170, as illustrated in FIGS. 3 and 4 as originally filed, the pulse controller 110 converts the output signal

therefrom to a low level signal. Output of the digital signal from the A/D converter 170 to the pulse controller 110 is additionally described in paragraph [0031] of the specification as originally filed.

Further, the Examiner indicated "it is also unclear what component determines that the conversion has been completed." In the present invention, the pulse controller 110 performs this determination by receiving the digital signal from the A/D converter 170, as described in paragraphs [0027] and [0031] of the specification as originally filed. After receiving the digital signal from the A/D converter, the pulse controller determines the conversion is complete and converts the output signal therefrom to a low level signal, as described in paragraph [0031] of the specification as originally filed.

In addition, the Examiner indicated

> the phrase 'the pulse controller outputs a high level signal when the fluxgate initiates a drive,' which is stated in paragraph 1 of page 4 is unclear. The use of the term 'when' in said phrase implies that the fluxgate will initiate a drive before the pulse controller outputs a high. Applicant states that the pulse controller sends a high to allow the pulse to be applied to the current amplifier. Thus, it appears that the high level signal should be sent before the drive commences to excite the magnetic substance.

Office action of Sept. 22, 2004, at pp. 3-4.

In the present invention, the fluxgate initiates a drive after the pulse controller outputs a high level signal. Appropriate clarification has been made paragraph 1 of page 4, i.e., paragraph [0010].

The Examiner additionally notes two informalities in paragraphs [0010] and [0039], which have been corrected by the instant amendment. Accordingly, applicants respectfully submit that the aspects of the specification that were unclear have been clarified and the informalities noted in the specification have been corrected.

Further, paragraphs [0009] through [0014] now parallel new claims 9-16.

Accordingly, reconsideration and withdrawal of the objections to the specification are respectfully requested.

D. Asserted Objections to Claims 1-7

In the outstanding Office action, the Examiner objected to claims 1-7 for containing informalities.

By the instant amendment, claims 1-7 are cancelled and new claims 9-16 are presented, thereby rendering moot the objections to claims 1-7. Further, the Examiner's objections to claims 1-7 have been studied and it is respectfully submitted that new claims 9-16 overcome the informalities noted by the Examiner.

Accordingly, reconsideration and withdrawal of the objections to claims 1-7 are respectfully requested.

E. Asserted Obviousness Rejection of Claims 1, 5 and 6

In the outstanding Office action, the Examiner rejected claims 1, 5 and 6 under 35 U.S.C. § 103(a) as being unpatentable over AAPA in view of the Dunne reference and in further view of the Hormel reference.

By the instant amendment, claims 1, 5 and 6 have been cancelled, thereby rendering the rejections thereto moot. Accordingly, reconsideration and withdrawal of the rejections to claims 1, 5 and 6 are respectfully requested.

F. Asserted Obviousness Rejection of Claims 2, 3, 4, 7 and 8

In the outstanding Office action, the Examiner rejected claims 2, 3, 4, 7 and 8 under 35 U.S.C. § 103(a) as being unpatentable over AAPA, the Dunne reference, and the Hormel reference in view of the Hawks reference.

By the instant amendment, claims 2, 3, 4, 7 and 8 have been cancelled, thereby rendering the rejections thereto moot. Accordingly, reconsideration and withdrawal of the rejections to claims 2, 3, 4, 7 and 8 are respectfully requested.

G. New Claims 9-16

By the instant amendment, new claims 9-16 are presented. New claims 9-16 more particularly and clearly recite the subject matter of the present invention.

Applicants respectfully submit that the subject invention, as presently claimed, is patentably distinct from the combination of cited prior art references. Specifically, neither the combination of the AAPA in view of the Dunne reference and in further view of the Hormel reference nor the combination of the AAPA, the Dunne reference, and the Hormel reference in view of the Hawks reference discloses or suggests a pulse controller in a sensing apparatus or a control method of a sensing apparatus, as disclosed in the present invention and presently recited in claims 9-16.

More specifically, neither combination discloses or suggests at least "a pulse controller for outputting a control signal allowing the pulse to be applied to the first and second current amplifiers, the pulse controller outputting the control signal at a start of a sensing cycle, the fluxgate generating an analog signal due to the excited magnetic substance and an A/D converter for converting the analog signal from the fluxgate into a digital signal, wherein the pulse controller stops outputting the control signal when the A/D converter outputs the digital signal to the pulse controller," as presently recited in independent claim 9.

In addition, neither combination discloses or suggests at least "a pulse controller for generating a pulse to block current from flowing into a driving coil of the fluxgate when it is determined that conversion of an analog signal from the fluxgate to a digital signal is completed by an A/D converter and the A/D converter outputs the digital signal to the pulse controller," as presently recited in independent claim 13.

Further, neither combination discloses or suggests "outputting a second control signal in order for the pulse generated from the pulse generator not to be applied to the first and second current amplifiers when the conversion of the analog signal into the digital signal by the A/D converter is complete and the A/D converter outputs the digital signal to the pulse controller," as presently recited in independent claim 14.

As the remaining claims depend, either directly or indirectly, from one of the above independent claims, new claims 9-16 are believed to be in a condition for allowance, a notice to such effect is respectfully requested.

H. Conclusion

Since the cited prior art references, taken alone or in combination, neither anticipate nor render obvious the subject invention as presently claimed, applicants respectfully submit that claims 9-16 are now in condition for allowance, and a notice to that effect is respectfully requested.

The remaining documents cited by the Examiner were not relied on to reject the claims. Therefore, no comments concerning these documents are considered necessary at this time.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing amendments and remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all the claims is hereby requested.

Respectfully submitted,

LEE, STERBA & MORSE, P.C.

Date: January 24, 2005

Eugene M. Lee, Reg. No. 32,039

LEE, STERBA & MORSE, P.C.
1101 WILSON BOULEVARD, SUITE 2000
ARLINGTON, VA 22209
703.525.0978 TEL
703.525.4265 FAX

PETITION and
DEPOSIT ACCOUNT CHARGE AUTHORIZATION

This document and any concurrently filed papers are believed to be timely. Should any extension of the term be required, applicant hereby petitions the Director for such extension and requests that any applicable petition fee be charged to Deposit Account No. 50-1645.

If fee payment is enclosed, this amount is believed to be correct. However, the Director is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1645.

Any additional fee(s) necessary to effect the proper and timely filing of the accompanying-papers may also be charged to Deposit Account No. 50-1645.

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include proposed changes to FIGS. 1 and 2. The attached drawing sheet of FIGS. 1 and 2 replaces the original drawing sheet of FIGS. 1 and 2. In FIG. 1, addition of a legend "PRIOR ART" has been proposed. In FIG. 2, addition of a previously omitted element, viz., AND gate 160, and deletion of some aspects have been proposed. No new matter has been added to the instant amendment to FIG. 2 as the relationship between the pulse controller 110, the pulse generator 120, and the AND gate 160 is illustrated in FIG. 4 as originally filed.

Applicants respectfully request favorable review and approval of the proposed amendments to the drawings.

Attachment: Replacement Drawing Sheet of FIGS. 1 and 2

Annotated Drawing Sheet Showing Proposed Changes

FIG. 1
(PRIOR ART)

KINDLY ADD

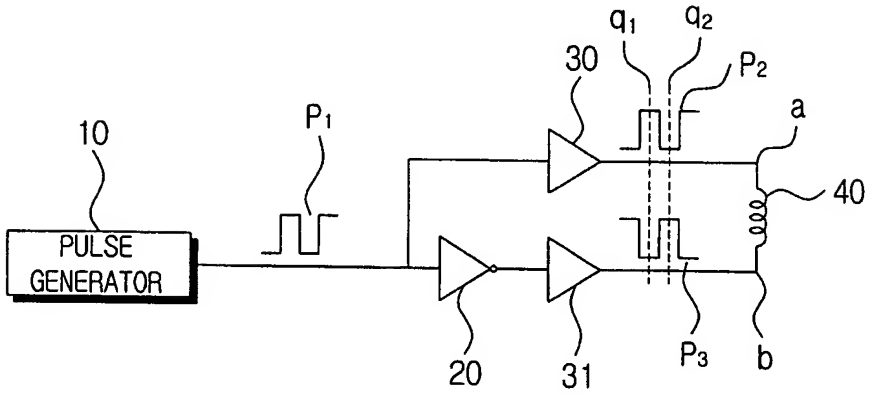

FIG. 2